| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/582,449 | BOLZ, STEPHAN | |
| | Examiner | Art Unit | |
| | Benjamin M. Baldridge | 2831 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *14 - 25, 27 - 30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14 - 25, 27, 29 - 30* is/are rejected.

7)☒ Claim(s) *28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *20090917*.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 August 2009 has been entered.

Amendment B, received 20 August 2009, is acknowledged and entered into the record. Claims 1 – 13 and 26 are cancelled; amended claims 14 - 25 and new claims 27 – 30 are presented for examination.

### *Claim Rejections - 35 USC § 103*

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 14 and 21 - 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tornare (French Patent Pub. No. FR2835056, published July 25, 2003, Application No. FR2020000689 20020121 (Abstract and machine translation of the description furnished herewith), hereinafter referred to as Tornare).

As to claim 14, Tornare discloses a hot wire oil sensor with microprocessor controlled variable duty cycle current supply, including:

**A control unit** [claims 14, 25] (Description, Paragraph 5, lines 1 – 6; note that the term "enslavement" in the machine translation from the French document is more properly translated "control");

**A voltage source having an output outputting an output voltage** [claims 14, 25] (Abstract, drawing, item 11; note that current generator outputs a pulse train, creating a voltage across items 12 and 13; note also that an analog to digital converter is disclosed in Tornare (Description, Page 2, Paragraph 5, lines 1 – 5) which outputs a digital (i.e. voltage) signal representative of a voltage to a microprocessor);

**A sensor resistor having a value being dependent on its temperature** [claims 14, 25] (Abstract, drawing, item 13; Description, Page 3, Paragraph 6, lines 2 – 4);

**A reference resistor connected in series with said sensor resistor, the output voltage of said voltage source dropping at said sensor resistor and said reference resistor in a connected state** [claims 14, 25] (Abstract, drawing, item 12; Description, Page 3, Paragraph 5, lines 2 – 4; note connection between the sensor resistor 13 and the reference resistor 12; note also connections between item 11 and items 12 and 13.

**An evaluation unit generating a control signal and connected to said control unit** [claim 25] (Description, Paragraph 5, lines 1 – 6; note that the term “enslavement” in the machine translation from the French document is more properly translated "control". Note also explicit disclosure of microprocessor control, and connection to vehicle CPU. Note also that the term in the machine translation "microprocessor of a calculator of the vehicle" is more properly translated as “microprocessor of an ECU of the vehicle”);

Tornare fails to explicitly disclose:

**Said reference resistor being dimensioned such that a power loss of said sensor resistor is substantially constant within a required value range of said sensor resistor** [claims 14, 25].

However, under the interpretation used here (note objection to the recited limitation “a power loss of said sensor resistor is substantially constant within a required value range of said sensor resistor", as discussed in paragraph 3 above), dimensioning the reference resistor as recited in the instant limitation would have been obvious to a person of ordinary skill in the art at the time of the invention, as it has been held that discovering an optimum value of a result effective variable (in this case the power rating of the reference resistor) involves only routine skill in the art. *In re Boesch, 617 F. 2d*

*272, 205 USPQ 215 (CCPA 1980).* Moreover, choosing power ratings for resistors to meet power dissipation requirements, as recited in the instant limitation, is a common practice in many circuit design arts, and as such is an ordinary exercise of ordinary skill in those arts at the time of the invention. Resistors, including temperature sensitive resistors such as thermistors or PTC resistors, are manufactured to meet power dissipation specifications, and a power rating is a customary specification, routinely published by the resistor manufacturers, and routinely used by circuit designers to maintain safe current levels in resistors.

As to claim 21, Tornare discloses;

**Said reference resistor is connected both to said output of said voltage source and to said sensor resistor** (Abstract, drawing; note connection of items 11, 12, 13).

As to claim 22, Tornare discloses:

**A first output, the control unit outputting a variable characterizing a voltage drop by said sensor resistor and said reference resistor at said first output** (Abstract, drawing, items 16, 19, 20; note connections);

**And a second output, the control unit outputting a variable characterizing a potential between said sensor resistor and said reference resistor at said second output** (Abstract, drawing, items 17, 18; note also Description, Page 2, paragraph 5, lines 2 - 5, and Paragraph 7, lines 1 - 4 (the term 'tension' is construed to mean voltage in this context).

As to claim 23, Tornare discloses:

**A voltage divider having an input side receiving the voltage drop over said sensor resistor and said reference resistor, said voltage divider having an output side connected to said first output** (Abstract, drawing; note connection between current generator, item 11, to items 12 and 13, reference and sensor resistors, connected in series. Note also output of voltage across items 12 and 13 to items 16 and items 17, 18 and 21, respectively).

4. Claims 25, 27, 28, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tornare in view of Hormel et al. (US Patent 4,550,261, October 29, 1985, hereinafter referred to as Hormel).

As to claim 25, Tornare discloses a hot wire oil sensor with microprocessor controlled variable duty cycle current supply, including:

**A control unit** [claims 14, 25] (Description, Paragraph 5, lines 1 – 6; note that the term "enslavement" in the machine translation from the French document is more properly translated "control");

**A voltage source having an output outputting an output voltage** [claims 14, 25] (Abstract, drawing, item 11; note that current generator outputs a pulse train, creating a voltage across items 12 and 13; note also that an analog to digital converter is disclosed in Tornare (Description, Page 2, Paragraph 5, lines 1 – 5) which outputs a digital (i.e. voltage) signal representative of a voltage to a microprocessor);

**A sensor resistor having a value being dependent on its temperature** [claims 14, 25] (Abstract, drawing, item 13; Description, Page 3, Paragraph 6, lines 2 – 4);

**A reference resistor connected in series with said sensor resistor, the output voltage of said voltage source dropping at said sensor resistor and said reference resistor in a connected state** [claims 14, 25] (Abstract, drawing, item 12; Description, Page 3, Paragraph 5, lines 2 – 4; note connection between the sensor resistor 13 and the reference resistor 12; note also connections between item 11 and items 12 and 13.

**An evaluation unit generating a control signal and connected to said control unit** [claim 25] (Description, Paragraph 5, lines 1 – 6; note that the term "enslavement" in the machine translation from the French document is more properly translated "control". Note also explicit disclosure of microprocessor control, and connection to vehicle CPU. Note also that the term in the machine translation "microprocessor of a calculator of the vehicle" is more properly translated as "microprocessor of an ECU of the vehicle");

Tornare fails to explicitly disclose:

**Said reference resistor being dimensioned such that a power loss of said sensor resistor is substantially constant within a required value range of said sensor resistor** [claims 14, 25].

However, under the interpretation used here (note objection to the recited limitation "a power loss of said sensor resistor is substantially constant within a required value range of said sensor resistor", as discussed in paragraph 3 above), dimensioning the reference resistor as recited in the instant limitation would have been obvious to a person of ordinary skill in the art at the time of the invention, as it has been held that discovering an optimum value of a result effective variable (in this case the power rating of the reference resistor) involves only routine skill in the art. *In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).* Moreover, choosing power ratings for resistors to meet power dissipation requirements, as recited in the instant limitation, is a common practice in many circuit design arts, and as such is an ordinary exercise of ordinary skill in those arts at the time of the invention. Resistors, including temperature sensitive resistors such as thermistors or PTC resistors, are manufactured to meet power dissipation specifications, and a power rating is a customary specification, routinely published by the resistor manufacturers, and routinely used by circuit designers to maintain safe current levels in resistors.

Tornare fails to disclose:

**Said evaluation unit having a regulator, said regulator controlling a regulated variable being a voltage drop over said sense resistor and said reference resistor and outputting an actuating signal being the control signal.**

Hormel discloses:

**Said evaluation unit having a regulator, said regulator controlling a regulated variable being a voltage drop over said sense resistor and said reference resistor and outputting an actuating signal being the control signal** (Column 2, lines 54 - 62; note explicit disclosure of regulator as part of the computer, which is interpreted here as part of the evaluation unit).

Given the teaching of Hormel, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the circuit and system of Tornare by employing well known or conventional features such as an evaluation unit having a regulator controlling a voltage drop over a sense resistor and reference resistor, as disclosed by Hormel, in order to maintain the voltage drop within an acceptable range for sensing a fluid level.

As to claims 27 and 29, Hormel further discloses:

**Said sensor resistor senses an oil level of an engine of a motor vehicle** [claims 27, 29] (Column 1, lines 15 – 17; also Column 3, lines 43 – 50).

As to claim 30, Hormel further discloses:

**Said sensor resistor senses an oil level of an engine of a motor vehicle substantially independently of an initial temperature of said sensor** [claim 30] (Column 3, lines 43 – 50; also Column 3, lines 55 – 60; note discussion of control of temperature of the sensor).

5. Claims 15 - 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tornare in view of Doherty et al. (US Patent 6,917,243 B2, July 12, 2005, hereinafter referred to as Doherty).

Tornare discloses a hot wire oil level sensor apparatus as discussed in paragraph 7 above. Tornare fails to disclose:

**Said voltage source amplifies an input voltage** [claim 15];

**Said voltage source has a limiter for limiting the output voltage** [claim 16];

**Said voltage source includes first, second and third transistors with a common emitter and each having a base and a collector, a base current of said first transistor being a dependent on a control signal applied to the control unit, said base of said second transistor connected to said collector of said first**

**transistor, and said base of said third transistor is connected to said collector of said second transistor** [claim 18].
Doherty discloses:

**Said voltage source amplifies an input voltage** [claim 15] (Column 2, lines 10 - 14;

**Said voltage source has a limiter for limiting the output voltage** [claim 16] (Column 6, lines 50 – 53);

**Said voltage source includes first, second and third transistors with a common emitter and each having a base and a collector, a base current of said first transistor being a dependent on a control signal applied to the control unit, said base of said second transistor connected to said collector of said first transistor, and said base of said third transistor is connected to said collector of said second transistor** [claim 18] (Figure 2, items 221, 222, 223 (disclosed as prior art by Doherty); Column 6, lines 22 – 23. Note that NPN bipolar junction transistors used in common emitter configuration, employed as successive amplifier stages and configured as recited in the instant claim, is a common design practice in the receiver design and analog circuit design arts, and would have been obvious to a person of ordinary skill in any of those arts at the time of the invention).

Given the teaching of Doherty, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the circuit and system of Tornare by employing well known or conventional features such as an amplified input voltage, a limiter, and successive transistor stages in common emitter configuration, with collectors of the first and second stages coupled to the bases of the second and third stages, as disclosed by Doherty, in order to either amplify or limit a detected signal and maintain its amplitude within an acceptable range.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tornare in view of Doherty, as applied to claims 15, 16 and 18 above, and further in view of Black (US Patent 4,151,456, April 24, 1979, hereinafter referred to as Black).

As to claim 17, Tornare in view of Doherty discloses an apparatus as discussed in paragraph 8 above. Tornare in view of Doherty fails to disclose:

**Said limiter is a Zener diode.**

Black discloses:

**Said limiter is a Zener diode** (Figures 2 and 3, item 18; Column 1, lines 53 - 59; Column 2, lines 34 – 36; Note that Black explicitly discloses the use of the voltage limiting characteristics of a Zener diode to limit a voltage).

Given the teaching of Black, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the circuit and system of Tornare in view of Doherty by employing well known or conventional features such as a Zener diode, as disclosed by Doherty, in order to limit a detected signal and maintain its amplitude within an acceptable range.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tornare in view of Black.

As to claim 26, Tornare discloses a hot wire oil level sensor apparatus as discussed in paragraph 7 above. Tornare fails to disclose:

**Said evaluation unit has a regulator, said regulator controlling a regulated variable being a voltage drop over said sensor resistor and said reference resistor and outputting an actuating signal being the control signal.**

Black discloses:

**Said evaluation unit has a regulator, said regulator controlling a regulated variable being a voltage drop over said sensor resistor and said reference resistor and outputting an actuating signal being the control signal** (Figures 2 and 3, items 20, 12; note that Black discloses a regulator controlling a voltage drop over a resistor, item 20, representing an internal resistance of a battery, and any external resistance that may be added).

Given the teaching of Black, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the circuit and system of Tornare in view of Doherty by employing well known or conventional features such as a Zener diode, as disclosed by Doherty, in order to regulate a voltage drop over a combination of resistors and maintain its amplitude within an acceptable range.

8. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tornare in view of Doherty, as applied to claims 15, 16 and 18 above, and further in view of Mapes (US Patent US 6,873,838 B2, March 29 2005, hereinafter referred to as Mapes).

Tornare in view of Doherty discloses an apparatus as discussed in paragraph 8 above.

Tornare in view of Doherty fails to disclose:

**Said voltage source has a low pass filter disposed between said first and second transistors.**

Mapes discloses:

**Said voltage source has a low pass filter disposed between said first and second transistors** (Figure 2, item 30; Column 4, lines 33 – 37. Note also that the use of low pass or other filters to limit input bandwidth or reject unwanted frequency components of a signal is a common design practice in the receiver design and analog circuit design arts, and would have been obvious to a person of ordinary skill in any of those arts at the time of the invention).

Given the teaching of Mapes, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the circuit and system of Tornare in view of Doherty by employing well known or conventional features such as a low pass filter, as disclosed by Mapes, in order to reject unwanted frequency components in a signal produced by nonlinearities in an amplifier stage.

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tornare in view of Doherty and in view of Mapes, as applied to claim 19 above, and further in view of Luo et al (US Patent Application Publication Pub. No. US 2003/0011434 A1, Pub. Date January 16, 2003, hereinafter referred to as Luo).

As to claim 20, Tornare in view of Doherty and in view of Mapes discloses:

**A voltage supply connected to said voltage source** (Doherty, Figure 1, item 101d; Column 6, lines 21 - 22);

**Said low-pass filter includes: a capacitor connected to said collectors of said first and second transistors and also to said voltage supply** (Doherty, Figure 1, items 101d, 132, 133; note connections between voltage supply item 101d and coupling capacitors items 132, 133).

Tornare in view of Doherty and in view of Mapes fails to disclose:

**A resistor connected both to said collector of said first transistor and also to said voltage supply;**

**A further resistor connected both to said collector of said second transistor and also to said voltage supply.**

Luo discloses:

**A resistor connected both to said collector of said first transistor and also to said voltage supply** (Figure 2, items 31, 70, 72; [0023], lines 18 – 21; [0031], lines 9 – 12. Note also that the use of a resistor connected to the collector of a bipolar device and voltage supply is often part of a biasing circuit, necessary to create a proper operating condition for a bipolar junction transistor. As such it is a common design practice in the receiver design and analog circuit design arts, well understood by persons of ordinary skill in those arts, and would have been obvious to persons of ordinary skill in any of those arts at the time of the invention).

**A further resistor connected both to said collector of said second transistor and also to said voltage supply** (Figure 2, items 31, 70, 72; [0023], lines 18 – 21; [0031], lines 9 – 12. Note also comments immediately above regarding use of resistors in biasing circuits for bipolar junction transistors)

Given the teaching of Luo, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the circuit and system of Tornare in view of Doherty and in view of Mapes by employing well known or conventional features such as biasing resistors, as disclosed by Luo, in order to create the necessary biasing condition for a bipolar junction transistor to function.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tornare in view of Monroe (US Patent Application Publication Pub. No. US 2002/0084844 A1, Pub. Date July 4, 2002, hereinafter referred to as Monroe).

As to claim 24, Tornare discloses a hot wire oil level system, as discussed in paragraph 7 above.

Tornare fails to disclose:

**A switch, said switch being used to control whether the voltage drop at said sensor resistor and said reference resistor is applied to said voltage divider on said input side or a supply voltage of an evaluation unit.**

Monroe discloses:

**A switch, said switch being used to control whether the voltage drop at said sensor resistor and said reference resistor is applied to said voltage divider on said input side or a supply voltage of an evaluation unit** ([0008], lines 1 – 4; [0009], lines 2 – 4; [0039], lines 1 – 10; note also that the use of a switch as recited in the instant claim is common in the analog and digital design arts, and would have been obvious to persons of ordinary skill in those arts at the time of the invention).

Given the teaching of Monroe, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the circuit and system of Tornare by employing well known or conventional features such as a switch, as disclosed by Monroe, in order to switch a voltage between branches of a circuit.

### *Allowable Subject Matter*

11. Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to teach or suggest, singly or in combination, a control device including

**said sensor resistor senses the oil level of the engine of the motor vehicle substantially independently of an initial temperature of said sensor resistor**

in combination with the other limitations of claim 25 and intervening claim 27.

### *Response to Arguments*

13. Applicant's arguments filed 20 August 2009 have been fully considered but they are not persuasive.

As to claims 14 and 25, applicant argues that the instant claims have been amended to better define the invention, and to distinguish over the prior art cited in the last office action. However, the amendment is ineffective to distinguish over Tornare, as the limitation intended to differentiate applicant's invention is ambiguous, as discussed in paragraph 3 above.

Additionally, applicant argues in essence that Tornare teaches a current source rather than a voltage source, and that the two cannot be seen as equivalents. However, it is clear that applicant's invention would be inoperative if the voltage source recited in the instant claims did not furnish current. Tornare's current source creates a voltage across

the wire and resistor disclosed by Tornare, anticipating the voltage created across the sensor and reference resistor recited by the applicants.

For these reasons, applicant's arguments are not persuasive.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin M. Baldridge whose telephone number is 571 270 1476. The examiner can normally be reached on Monday through Friday 7:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571 272 2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diego Gutierrez/

Supervisory Patent Examiner, Art Unit 2831

/Benjamin M Baldridge/
Examiner, Art Unit 2831